



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
State Revolving Fund Loan Program
L & C Tower, 8th Floor
401 Church Street
Nashville, TN 37243

FINDING OF NO SIGNIFICANT IMPACT
Approval of Facilities Plan
Tellico Area Services System (Monroe and Loudon Counties), Tennessee
Project No. SRF 2007-198

January 14, 2008

The National Environmental Policy Act requires federally designated agencies to determine whether a proposed major agency action will significantly affect the environment. One such major action, defined by Section 511(c)(1) of the Clean Water Act, is the approval of a facilities plan prepared pursuant to Title VI of the Clean Water Act. In making this determination, the State Revolving Fund (SRF) Loan Program assumes that all facilities and actions recommended by the plan will be implemented. The state's analysis concludes that implementing the plan will not significantly affect the environment; accordingly, the SRF Loan Program is issuing this Finding of No Significant Impact (FNSI) for public review.

The Tellico Area Services System (TASS) has completed the facilities plan entitled "Niles Ferry Industrial Park Wastewater Treatment Plant Expansion" dated September 2007. The facilities plan provides recommendations for improvements to the wastewater treatment system serving the TASS' service area. TASS was created by Monroe County and Loudon County in order to provide water and sewer services to areas outside the cities in their respective counties. This project includes the expansion and upgrade of the Niles Ferry Industrial Park wastewater treatment plant (WWTP) from 0.3 million gallons per day (MGD) to 1.5 MGD and will consist of the construction of two oxidation ditches, a raw wastewater pump station, a mechanically-cleaned bar screen, two clarifiers, two tertiary filters, ultraviolet disinfection, sludge dewatering facility and the conversion of the existing WWTP to aerobic digesters. All construction will occur on the existing wastewater treatment plant site. The total estimated project cost is \$9,416,068. A State Revolving Fund loan in the amount of \$9,416,068 has been requested by Monroe and Loudon Counties for this project.

Attached is an Environmental Assessment containing detailed information supporting this proposed action. Comments supporting or disagreeing with this proposed action received within 30 days of the date of this FNSI will be evaluated before we make a final decision to proceed. If you wish to comment or to challenge this FNSI, send your written comment(s) to:

Mr. Sam R. Gaddipati, Environmental Manager
State Revolving Fund Loan Program
Tennessee Department of Environment and Conservation
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or contact him by telephone at (615) 532-0445 or by e-mail at sam.gaddipati@state.tn.us.

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A. PROPOSED FACILITIES AND ACTIONS; FUNDING STATUS

The facilities plan provides recommendations for improvements to the wastewater treatment system serving the TASS' service area. TASS was created by Monroe County and Loudon County in order to provide water and sewer services to areas outside the cities in their respective counties. This project includes the expansion and upgrade of the Niles Ferry Industrial Park wastewater treatment plant (WWTP) from 0.3 million gallons per day (MGD) to 1.5 MGD and will consist of the construction of two oxidation ditches, a raw wastewater pump station, a mechanically-cleaned bar screen, two clarifiers, two tertiary filters, ultraviolet disinfection, sludge dewatering facility and the conversion of the existing WWTP to aerobic digesters. All construction will occur on the existing wastewater treatment plant site. The facilities Planning Area and project location are indicated on Figure Nos. 1 and 2 of this Environmental Assessment.

FUNDING STATUS

The facilities described above comprise the scope of Clean Water State Revolving Fund Loan No. 2007-198 scheduled for funding in fiscal year 2008. The estimated project costs are summarized in the following tabulation:

<u>PROJECT CLASSIFICATIONS</u>	<u>COSTS (\$)</u>
Administrative & Legal	70,000
Planning Fees	12,406
Design Fees	272,326
Engineering Basic Fees	25,000
Other Engineering Fees	50,000
Resident Inspection	310,536
Construction	8,650,800
Miscellaneous	25,000
TOTAL	9,416,068
State Revolving Fund Loan	9,416,068

Monroe and Loudon Counties have each applied for a \$ 4,708,034 State Revolving Fund Loans to fund the total cost of \$9,416,068.

B. EXISTING ENVIRONMENT

TASS Planning Area is located in Monroe and Loudon Counties in east Tennessee. A discussion of existing environmental features in the area include the following:

SURFACE WATERS

Surface waters within the proposed Planning Area include the Tellico Reservoir, Fort Loudon Reservoir, Little Tennessee River, Baker Creek, Notchy Creek, Fourmile Creek, Ninemile Creek, Bat Creek, Smokey Branch, Harrison Branch, Hammontree Branch, Corntassel Branch, Kennedy

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Branch, Miller Branch, Chaney Branch, Maree Branch, and their tributaries. Designated uses for area streams include domestic water supply, industrial water supply, fish and aquatic life, recreation, irrigation, livestock watering and wildlife, and navigation. TASS' Water Treatment Plant supplies drinking water to residents in the service area of Monroe and Loudon Counties. The raw water is obtained from a surface water intake on the Little Tennessee River upstream of the proposed WWTP's effluent discharge point.

GROUNDWATER

All of Loudon County lies in the Valley and Ridge province. The surface forms, which consist of alternating ridges and valleys, reflect the varying resistance to weathering that the folded and faulted, dominantly calcareous rocks possess. Rocks that crop out in Loudon County range in age from Lower Cambrian to Middle Ordovician. The oldest rocks, the varicolored sandstone and shale of the Rome formation of Early Cambrian age, are exposed in the extreme southeastern part of the county and along the southeastern side of the Beaver Valley fault in the northwest part of the county. A normal stratigraphic section from the Rome formation up through the Ottosee shale is found between the Beaver Valley fault and the Saltville fault to the southeast. Members of the Knox group form Black Oak Ridge in this area. With the exception of the Rome and Pumpkin Valley formations, all of these rocks are calcareous. The Rome formation contains some calcareous zones, but most of it is noncalcareous. The Pumpkin Valley shale contains little calcareous material.

The rocks in Loudon County have little primary porosity. Therefore, the occurrence of ground water is controlled by the secondary porosity resulting from fractures caused by the folding and faulting of the rocks. Circulating ground water frequently enlarges these fractures. Because the amount of solution decreases with depth, it is generally not productive to drill wells deeper than 300 feet (ft). The average well in Loudon County yield sufficient water for domestic use. Ground water quality is generally good in the area.

SOILS

There are six soil associations identified in the TASS project area.

The Fullerton-Clarksville-Bolton Association has developed over dolomites and is generally located in areas of irregularly shaped hills that have fairly narrow tops. Fullerton soils occupy approximately two-thirds of the acreage and are well-drained, cherty, and upland soils. This soil group has moderate percolation rates.

The Fullerton-Greendale-Dewey Association consists of light colored, cherty, and red soils on rolling and hilly uplands underlain by dolomite limestone. The soils in this association have a slower permeability than the Fullerton-Clarksville-Bolton Association and erosion problems can occur if erosion control measures are not properly maintained.

The Dewey-Decatur-Emory Association includes soils that are deep and well-drained with red subsoils on rolling to hilly uplands. Soils in this association are moderately permeable but severe flooding can occur in low-lying areas.

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The Tellico-Alcoa-Newbert Association can be found in a relatively narrow belt south of Loudon. The area is generally steep to very steep hills and knobs underlain by calcareous sandstone and sandy shale. Poor slope stability represents the primary limitation for intensive urban development, especially where the slopes are steep.

The Waynesboro-Cumberland-Emory Association is found along the Tennessee River. The area is one of high stream terraces and bottom lands. Only moderate limitations exist with regard to development on these soils. Percolation rates pose no significant problems.

The Huntington-Lindsdale-Melvin-Congaree Association is generally located along the bottom lands adjacent to the streams in Loudon County. Moderate to severe limitations apply to these soils with respect to permeability. This association is frequently subject to flooding.

TOPOGRAPHY

TASS proposed Planning Area is primarily characterized by ridges and valleys running southwest to northeast that range from nearly level to slopes in excess of twenty percent. Local elevations range from 813 to 1125 feet above mean sea level.

OTHER ENVIRONMENTAL FEATURES

No wild or scenic rivers or unique agricultural, scientific, cultural, ecological, or natural areas were identified in the Tellico Area Services System's proposed Planning Area.

C. TASS' EXISTING WASTEWATER FACILITIES

TASS operates the only wastewater collection and treatment system in the Planning Area. The Niles Ferry Industrial WWTP is a packaged extended aeration facility that was constructed in 1981 by Monroe County in order to treat wastewater from the Niles Ferry Industrial Park and the Town of Vonore, Tennessee. The WWTP has a treatment capacity of 0.3 MGD; currently treats wastewater from the Niles Ferry Industrial Park, the Town of Vonore, the City of Greenback, and surrounding rural areas; and consists of screening, influent pumping, equalization tank, aeration, clarification, disinfection, and an aerobic sludge digester. Sludge is dewatered in sludge drying beds and afterwards disposed of at the state-approved Mine Branch Landfill. The WWTP discharges treated effluent at River Mile 18.6 of the Little Tennessee River. The WWTP currently operates under the National Pollutant Discharge Elimination System (NPDES) Permit No. TN0058238 that includes the following parameters and effluent limitations:

<u>PARAMETER</u>	<u>EFFLUENT LIMITATIONS</u>
CBOD ₅	30 milligrams per liter (mg/l)
Suspended Solids	30 mg/l
Fecal Coliform	200/1000 colonies per milliliter
Dissolved Oxygen	1.0 instantaneous minimum
Chlorine Residual, Total	2.0 instantaneous maximum
Settleable Solids	1.0 daily maximum (milliliter/liter)
pH	6.0-9.0 (Standard Units)

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TASS wastewater collection system consists of approximately 237,131 linear feet of 6-inch through 10-inch diameter gravity sewer, 14 pump stations with capacities ranging from 0.05 to 0.5 MGD, and approximately 750 manholes. The collection system pipe materials are approximately 10% vitrified clay and 90% polyvinylchloride.

D. NEED FOR PROPOSED FACILITIES AND ACTIONS

The Niles Ferry Industrial WWTP is currently operating at 80% of its design capacity. The WWTP is also experiencing mechanical failures and operational problems because of the age of the existing equipment. Rural undeveloped areas of Monroe and Loudon Counties are in close proximity to Tellico Lake and are experiencing high rates of residential growth and will be developed within the next several years. Monroe and Loudon Counties desire to protect public health and the environment by controlling the method of sewage treatment and disposal and providing permitted treatment and disposal to these areas.

Existing and projected facility conditions are shown in the following table:

EXISTING AND PROJECTED FACILITY CONDITIONS

<u>POPULATION</u>	<u>EXISTING (2007)</u>	<u>PROJECTED (2027)</u>
Town of Vonore	1,300	1,574
% Sewered	70	95
City of Greenback	1,080	1,561
% Sewered	5	95
Planning Area Excluding Vonore and Greenback	3,620	16,219
% Sewered	10	45
Total Planning Area	6,000	19,354
% Sewered	20	53

**NILES FERRY INDUSTRIAL
WWTP FLOWS (GPD)**

	<u>EXISTING (2007)</u>	<u>PROJECTED (2027)</u>
Domestic/Commercial	122,500	1,030,000
Industrial	100,000	570,000
Infiltration/Inflow	12,500	20,000
TOTAL	235,000	1,620,000

E. ALTERNATIVES ANALYSIS

Several alternatives, including a "No-action" alternative, were evaluated for wastewater treatment and management in the September 2007 facilities plan. A summary discussion of the

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evaluation of each alternative for wastewater treatment and the selection of the recommended plan follows:

NO ACTION

The "No-action" approach was not a viable alternative. TASS has discharge limitations that must be met in order to maintain or improve surface water conditions. The WWTP is currently operating at 80 percent of the design capacity. Therefore, some action must be taken to bring the WWTP into compliance with State regulations, and this alternative was rejected.

ALTERNATIVES FOR TREATMENT

Aero-Mod System

An Aero-Mod System is an extended aeration system employing modular units. The modules are essentially treatment plants in themselves, capable of aeration, sedimentation (using tube settlers), skimming, and sludge return. This alternative consists of the construction two aeration basins, headworks, two clarifiers, two tertiary filters, ultra-violet (UV) disinfection, and a sludge dewatering facility. This alternative was not the most cost-effective for this project and was rejected.

Sequencing Batch Reactor (SBR)

The SBR incorporates intermittent flow activated sludge technology. The system uses vessels in which the activated sludge is aerated over a number of predetermined cycles. Solids separation and effluent (or supernatant) decant occur during the air-off portion of a cycle. This alternative consists of the construction of two SBRs, headworks, two tertiary filters, UV disinfection, and a sludge dewatering facility. This alternative was not the most cost-effective for this project and was rejected.

Aerobic Fluidized Fixed Film System

This process consists of two-stage oxic/anoxic biological reactors to remove nitrogen. Wastewater flows into two biological trains followed by a two-staged aeration system equipped with fluidized media that allows the system to increase the nitrification capacity while maintaining a constant solids loading rate. This alternative consists of the construction of two fluidized media aeration basins, headworks, two clarifiers, two tertiary filters, UV disinfection, and a sludge dewatering facility. This alternative was not the most cost-effective and was rejected.

Oxidation Ditch Process

An oxidation ditch is an activated sludge process commonly based on the extended aeration mode. Horizontal brush, cage, or disc type aerators are used. Typical oxidation ditch treatment systems consist of a single, closed-loop channel four to six feet deep with sloping sidewalls. This alternative consists of the construction of two oxidation ditches, a raw wastewater pump station, mechanically cleaned bar screen, two clarifiers, two tertiary filters, ultraviolet disinfection, sludge dewatering equipment and the conversion of the existing WWTP to aerobic digesters. This alternative was the most cost-effective and was selected.

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F. ENVIRONMENTAL CONSEQUENCES; MITIGATIVE MEASURES

The environmental benefits of this project will be an improvement of water quality conditions in the area and the protection of public health.

During the construction phase, short-term environmental impacts due to noise, dust, mud, disruption of traffic, runoff of silt with rainfall, etc., are unavoidable. Minimization of these impacts will be required; however, many of these minimization measures will be temporary and only necessary during construction. Using the following measures to prevent erosion will minimize impacts on the environment:

1. Specifications will include temporary and permanent measures to be used for controlling erosion and sediment.
2. Soil or landscaping maintenance procedures will be included in the specifications.
3. The contractor will develop an Erosion Control Plan. It will contain a construction schedule for each temporary and permanent measure controlling erosion and sediment. It will include the location, type, and purpose for each measure and the times when temporary measures will be removed or replaced.

These measures, along with requiring the contractor to return the construction site to as-good-as or better-than its original condition, will prevent any adverse impacts due to erosion.

G. PUBLIC PARTICIPATION; SOURCES CONSULTED

A Public Meeting was held on January 7, 2008, at 6:00 p.m., local time, in Loudon County and on January 10, 2008, at 6:00 p.m., local time, in Monroe County. The selected plan for wastewater collection and treatment and user charges were described to the public, and their input was received. This agency is not aware of any unresolved public objections that may have been voiced before or after the public meeting regarding this project.

The annual median household income for the TASS service area is \$43,517. The current sewer user rate for the typical residential user (5,000 gallons per month) is \$26.17. The existing user charges are projected to be sufficient to repay the SRF loan. Therefore, no incremental increase in user charges will be required.

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Sources consulted about this project for information or concurrence were:

1. Tennessee Department of Agriculture
2. Tennessee Department of Economic and Community Development (ECD)
3. Tennessee Department of Environment and Conservation (TDEC), Division of Air Pollution Control (DAPC)
4. Tennessee Department of Transportation (TDOT)
5. TDEC, Division of Groundwater Protection (DGWP)
6. Tennessee Historical Commission
7. TDEC, Division of Archaeology (DA)
8. TDEC, Division of Natural Areas (DNA)
9. TDEC, Division of Solid Waste Management (DSWM)
10. TDEC, Division of Water Pollution Control (DWPC)
11. TDEC, Division of Water Supply (DWS)
12. Tennessee Wildlife Resources Agency (TWRA)
13. United States Army Corps of Engineers (USACE)
14. United States Fish and Wildlife Service (USF&W)
15. TASS
16. Loudon County
17. Monroe County
18. Vaughn & Melton